FLIGHT

The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

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CONTENTS

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Mar. 23	**Entries close for Gordon Bennett Balloon Race**
Apl. 12	**Lecture, "Some Controversial Points in Aircraft Design," by F. T. Hill, before I.Ae.E.**
May 11	**Lecture, "Experimental Flying," by Maj. M. E. A. Wright, before I.Ae.E.**
June 25–30	**International Air Congress, London**
June 30	**R.A.F. Aerial Pageant**
July	**Air Race for King's Cup**
July 20	**Gothenburg Exhibition**
Aug. 3–14	**Rhön Gliding Competition**
Aug. 6	**Aerial Derby**
Aug. 6–27	**French Gliding Competition, near Cherbourg**
Aug. 8–12	**F.I.A. Conference, Gothenburg.**
Sept. 23	**Gordon Bennett Balloon Race, Belgium**
Sept. 28	**Schneider Cup Seaplane Race at Cowes**
Dec. 1	**Entries close for French Aero Engine Competition**
1924	
Mar. 1	**French Aero Engine Competition.**

INDEX FOR VOL. XIV.

The Index for Vol. XIV of FLIGHT (January to December, 1922) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1s. per copy (1s. 1d. post free).

EDITORIAL COMMENT.

GENERALLY speaking, the debate in the House of Commons on the Air Estimates, 1923–24, was characterised by a full appreciation of the growing importance of the air. From no section was this importance denied, and nobody seriously suggested that any great reduction should be made in the amounts asked for. The debate resolved itself mainly into a Navy *versus* Royal Air Force controversy, and on the whole the air came out of the encounter extremely well. Our new Air Minister, Sir Samuel Hoare, proved by his explanatory memorandum on the Air Estimates, by his introduction to them in the House and by his replies during the debate, that he has already, although having been in office but a very short time, grasped to an astonishing extent the intricate subject presented by the air, and by his very frank statements, made without fear or favour, he has done a vast amount of good by helping, not only the House, but the country at large to a fuller appreciation of the extent to which our strength in the air has been allowed to dwindle until, from being a first-rate power in the air, we have dropped to a second or even third rank. For that he deserves well of the nation, and it is to be hoped that Sir Samuel will be able to remain in office for a much longer period than have his predecessors.

The Air Estimates Debate

With regard to the Estimates, we are quite certain that the House realises, and the country generally realises, that our present position as regards air defence is highly unsatisfactory. Even with the new squadrons for home defence which it is proposed to establish during the coming financial year, our preparations cannot be described as being adequate, but the increase in this year's Air Estimates, taken in conjunction with the reductions effected in the

other Services, indicates the trend of developments, and it may be firmly expected that next year—if not before—there will be a very substantial increase. There will have to be. For each year that elapses other nations are getting stronger in the air, and with the best will in the world to reduce armaments we cannot, in sheer self-preservation, afford to let others get ahead of us to too great an extent. We do not suggest that it will necessarily be imperative for Great Britain to adopt a one-power standard, or any other standard based upon relative numbers, but we do wish to point out that a nation equipped with the best machines in the world can be no match for an opponent who has available ten times as many machines, even if these are not of the same quality. By sheet weight of numbers the better machines might well be outclassed.

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The Navy or the R.A.F.

Among the mass of arguments used in the Navy *versus* R.A.F. controversy, sight is apt to be lost of the fundamental problem that has to be decided. The multitudinous details and the innumerable problems will have to be attacked sooner or later, certainly, but before we get to that stage the main issue to be decided must be made clear. Shorn of all superfluous detail, and taking from the beginning a long view of the situation, the considerations are as follows:—It is agreed by all parties—by the Navy as much as by anyone else—that Great Britain must be strong in the air. That is not seriously questioned by any party; in fact, it should be obvious that the air question, as Sir Samuel Hoare stated, is not a party question, but is one upon which we should all be able to agree. Starting, then, with the assumption that all are agreed that the future of Great Britain lies more and more in the air, the next step is to decide how we are to develop to the best advantage our aerial defences.

In the past the Navy has been responsible for protecting the trade routes of the Empire, for guarding the country against invasion. The seas separated this country from any potential enemy, and the only way a hostile attack could be made on us was by sea. With the advent of aircraft all that has been changed, and it is now possible—as we saw to a very small extent during the War, 1914-18—for an enemy to attack us from the air. In a few years' time an air attack will be on a scale undreamt of in 1914. So far all are in agreement. When, however, the question arises how are we to protect ourselves against attack by air, and more particularly who is to protect us, the contesting parties are no longer on common ground. It is realised by all that protection can only be obtained by means of aircraft, but as to the Service upon whom shall fall the duty opinions differ widely.

The Navy—as a Navy—can no longer protect these shores against all forms of invasion. The Navy realises this—even admits it, and suggests that the remedy is that we should gradually lift the Navy into the air. On the face of it this appears to be a sound argument, but is it? The Navy—and particularly the Admiralty—is the result of centuries of development in sea warfare. A school of thought was formed long ago, and the traditions of the whole Service have been based upon warfare at sea. If, now, we admit the Navy's claim, is it at all likely that the Navy will think of the air in terms other than naval? We think not. As Sir Frederick Sykes pointed out in his very moderate and logical maiden speech in Parliament during the air debate, at the least there is the danger that the section which should be our mainstay—the Independent Air Force—will not receive the attention it deserves. The Navy cannot be expected to foresee lines of development and progress which take no account of naval war at all, but which call for functions destined some day to become vastly more important than any action which the Navy presently may have to perform.

What would it mean if we decided that we are to have a really strong air arm, and that we shall produce it by "lifting the Navy into the air"? It would mean that, for all practical purposes, the Navy would start afresh. The lessons learned by the R.F.C. and R.A.F. during the War would be largely wasted, and air developments would receive a set-back which it would be extremely difficult to make good.

There can be no possible doubt that gradually the Air Service will increase in magnitude and importance. The only hope for the Navy, if it wishes to continue to be an important Service, lies in "lifting it into the air." That in itself explains the determined attacks, of which the most recent was launched in connection with the Estimates, made upon control of the naval air arm. But commission after commission has come to the conclusion that such an arrangement cannot result in efficiency. One is therefore forced to accept the conclusion that a division would be unwise. The only alternative is that we must let the R.A.F. expand and develop until ultimately it dominates the other Services. We agree entirely that, as a matter of sentiment, it is a great pity that the Service which has been the idol of the people for centuries, was at once our shield and our pride, should see itself tending towards second rank. But nature in its evolution is often cruel—although always balanced. In this light sentiment cannot be allowed to interfere with progress. We would suggest that if the Navy wants to get into the air its only way is to join hands wholeheartedly with the R.A.F. The Air Ministry has long held the door open, but the Navy has refused to avail itself of the opportunity. If it persists in this attitude we can foresee the day when the Air Ministry may close the door, and if the Navy then finds its personnel out of work it will only have itself to blame.

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The Grosvenor Challenge Cup

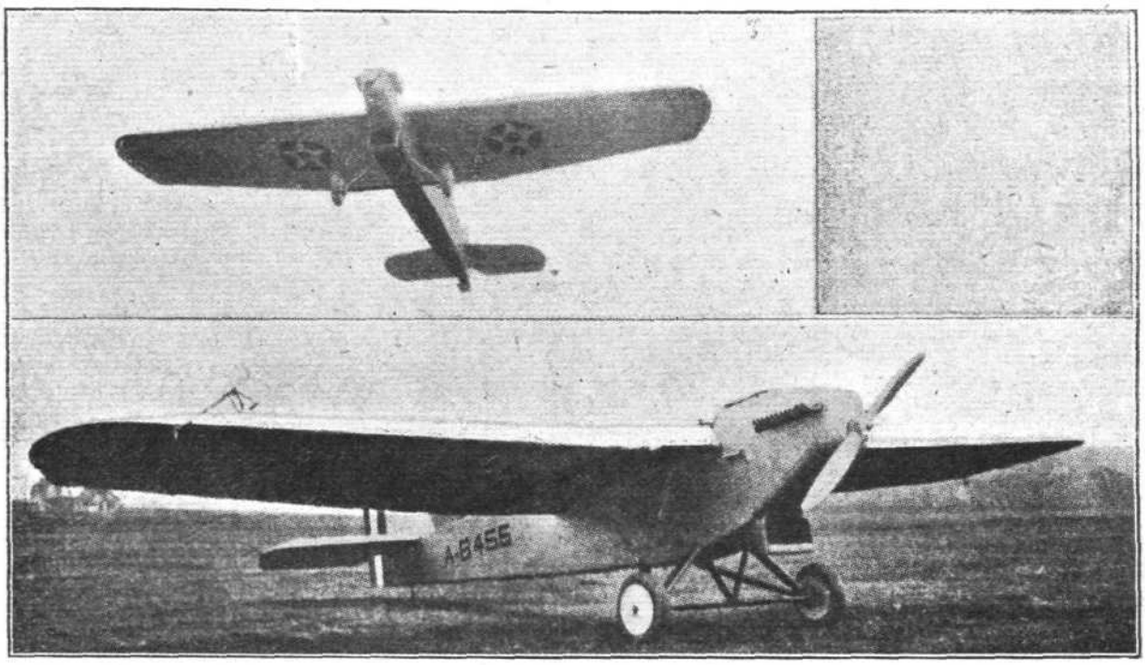
Under the Royal Aero Club notes on p. 158 will be found an announcement of a challenge cup and cash prizes which have been presented by Lord Edward Grosvenor, for competition by aeroplanes limited to an engine-power of 150 h.p. The race for the cup is to be held on June 23, starting and finishing at Lympne, and with Croydon, Bristol and Birmingham as the turning-points. The total distance is approximately 400 miles. We heartily welcome the presentation of this cup, and particularly the attempt which it represents of reviving interest in competition between machines fitted with low-power engines. It is quite certain that from a sporting point of view a race between machines with engines of low power is at least as interesting as one between modern "projectiles," while the cost involved is nowhere near as great. Thus it may be expected that the race for the Grosvenor Cup will do much to renew sporting flying, and personally we should be glad to see another cup or prize presented in which, not the engine power, but the cylinder capacity was limited to a certain maximum.

FLIGHT

THE MARTIN U.S. NAVY "GUN-SPOTTER" MONOPLANE

A NEW type of "gun-spotter" for directing from the air the fire of battleships has been produced under U.S. Navy specifications by the Glenn L. Martin Co., at Cleveland, Ohio, and has recently been undergoing a series of tests by a trial board. According to opinions of experts in the Bureau of Aeronautics, Navy Department, this machine gives every promise of success. We give below a few brief particulars, together with illustrations, of this machine, from our American contemporary *Aviation*.

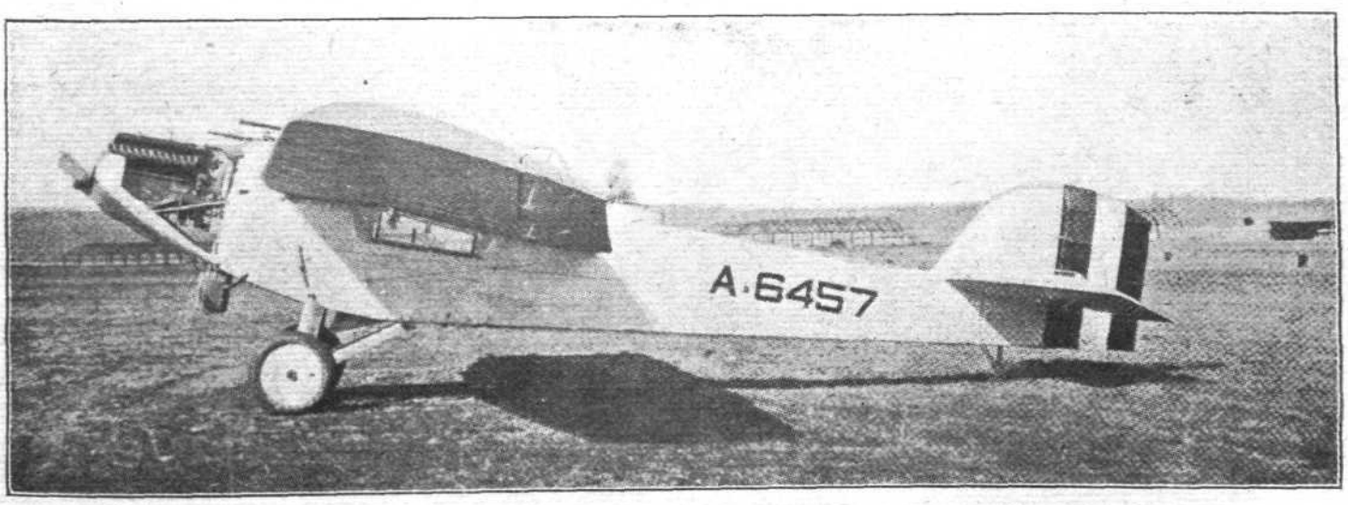
The Martin Observation, or "MO 1" as it is classed, is a three-seater cantilever monoplane, with an all-metal frame construction of aluminium alloy. It is equipped with a 375 h.p. Curtiss D12 engine. To meet the varied conditions under which a naval 'plane must operate, the MO is designed for interchangeable landing gear, which will make it adaptable for landing and taking off from the deck of an aeroplane carrier, or, in place of the wheels, pontoons may be substituted which will permit of landing and taking off from the water. It is also designed to be quickly assembled and dismantled for storage in a small space— a feature that will make it particularly suited to conditions on shipboard. The all-metal feature of construction ensures greater life and durability, and is at the same time a measure of economy in the repair and upkeep of the aircraft squadrons of the navy. This, with its attending advantages, is a direct result of investigation and research by the Bureau of Aeronautics. The design and specifications of the MO 1 were prepared by the Design Division of the Bureau of Aeronautics, Navy Department, under the direction of Commander J. C. Hunsaker. Its actual performance before the Navy Trial Board, as to high speed, low speed, climb, ceiling, load and manœuvrability, exceeded in every case the specified requirements, whilst the complete machine is *under* the guaranteed weight, and *over* all the specified factors of safety. This is all the more creditable in view of the new features in its design and construction. Another important feature is that the horse-power required to fly level is quite low, so that the cruising radius at reduced speeds is considerably increased.



THE GLENN MARTIN OBSERVATION MONOPLANE, "MO 1": Above, the machine is seen in flight and below is a three-quarter front view. The MO 1 is mainly of metal construction.

In order to obtain good visibility below, which is the main requisite for spotting, the wings of the MO 1 are mounted on top of the fuselage. A modified U.S.A. 27 wing-curve is employed. The wings are built up in three sections—a centre section, and two outer extensions— and is believed to be the lightest metal type wing of its capacity so far developed and built in America. Under sand load before Navy experts it gave a safety factor of 8.

The chord of the centre section is uniform—11 ft. 6 ins.—but the outer extensions taper to a 6 ft. 6 in.-chord at the tip.



THE GLENN MARTIN OBSERVATION MONOPLANE "MO 1": Side view showing the observer's window beneath the wings.

The main spars are of built-up Pratt-truss construction, the main longitudinal members being of ⅛ in. and 3/16 in. duralumin, formed in horse-shoe shape with a steel stiffener placed in the open part. The diagonal members are of 16- and 18-gauge duralumin tubing, all attachments being accomplished by means of heat-treated duralumin rivets and fish plates. The same material is used in the drag trussing. Wing ribs are of spruce, with ash nose strips and balsa-wood fillers in the compression members. Covering is of A-grade cotton fabric, fire-proofed, doped, enamelled and varnished.

The outer sections are attached to the centre section by means of steel ball-and-socket hinges. In the centre section, on each side of the fuselage, are located the two petrol tanks. These are of spun aluminium, conical in shape, and provided with a novel arrangement of baffle plates. Each has a capacity of 57 gals., and they are so mounted in the wing that in the event of fire they may be released by either the pilot or observer in such a manner that they are thrown clear of the floats and tail surfaces. When released the only petrol remaining is that in the carburettor and a short length of pipe. The two ailerons, of the submerged balance type, are built up of channel section duralumin, and are controlled by cables running over pulleys within the wing structure.

The rectangular fuselage is built up entirely of steel tubing, the joint and strut attachments being made by riveting and welding, and in the latter a new method, known as rosette welding, was effectively used at several points. For internal bracing the orthodox tie-rods are used. The engine, a 375 h.p. Curtiss D12, is mounted on ash bearers attached to the forward structure of the fuselage, and may readily be removed as a unit with the bearers attached. The engine is completely cowled in with sheet aluminium, and at the side of the engine, above the carburettor, a pressure fire extinguisher is provided, with a control from the pilot's and observor's cock-pits, which will when necessary produce an effective spray over all parts of the engine. Set in the cowling streamline below the engine is a welded aluminium oil tank, with fins for cooling the oil.

An aluminium fire wall separates the engine section from the pilot's cockpit, which is directly back of and above the engine at the leading edge of the wing. This position provides excellent visibility for the pilot, as well as plenty of room and accessibility to controls. Immediately behind the pilot's cockpit and below the wing is the observer's cockpit, the position of which permits unobstructed vision to either side and below. An auxiliary set of controls and instruments enables the machine to be piloted from this cockpit. At the rear of the observer's cockpit, and connected by a runway, is the rear gunner's position, at the trailing edge of the wing. By means of the flexible gun here in combination with the other gun equipment, the machine is protected from all directions.

The tail surfaces are of the internally braced type, and consist of a stabiliser, divided elevators, balanced rudder, and vertical fin. The elevators and rudder are entirely of channel, type, and horse-shoe section duralumin, with ribs of spruce. The stabiliser is adjustable, and may be trimmed during flight. The rudder and elevator controls are of the external type, and the stabiliser control cables run inside the fuselage.

As previously stated, both land and water gear are provided. In the case of the former, the conventional two-wheel, wide-track type is employed. The struts, braces and axles are of tubular steel, with welded and riveted fittings and streamlined with sheet duralumin. The wheels have 36 by 8-in. tyres. This land type gear can be removed at the fuselage attachment fittings, and a gear, comprising two seaplane floats, with struts and braces, attached in place. So fitted the entire structural weight of the machine is 3,305 lbs., which is reduced to 2,920 lbs. in the case of the land gear.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN MARCH 4 AND MARCH 17, INCLUSIVE

Route (including certain diverted journeys)	No. of flights*	No. of passengers	No. of flights carrying Mails	No. of flights carrying Goods	No. of journeys completed†	Average flying time h. m.	Fastest time made by	Type and (in brackets) Number of each type flying
Croydon–Paris	33‡	58	12	25	30	2 53	H.P.W8B. G-EBBH (2hr. 16m.)	G. (12), H.P.W.8B. (3), Sp. (1).
Paris–Croydon	31§	163	10	24	26	2 55	H.P.W8B. G-EBBH (2h. 20m.)	G. (13), H.P.W.8B. (3), Sp. (1).
Croydon–Brussels–Cologne	14‖	54	9	1	13	4 12	D.H. 34 G-EBBW (3h. 1m.)	D.H. 34 (4).
Cologne–Brussels–Croydon	14¶	67	6	1	13	3 41	D.H. 34 G-EBBW (2h. 6m.)	D.H. 18 (1), D.H. 34 (4).
Croydon–Rotterdam ...	10	3	10	10	10	2 47	Fokker H-NABR (2h. 5m.)	F. (5).
Rotterdam–Croydon ...	10	13	10	10	10	2 37	Fokker H-NABD (2h. 9m.)	F. (5).
Manchester–Croydon–Amsterdam	14	33	1	1	14	5 47	—	D.H. 34 (3).
Amsterdam–Croydon–Manchester	12	20	5	3	12	5 7	—	D.H. 34 (4).
Total for two weeks ...	138	411	63	75	128			

* Not including "private" flights. † Including certain journeys when stops were made *en route*.
‡ Croy.–Lym. 6, Lym –L.B. 9. § L.B.–Lym. 1. ‖ Croy.–Brus. 2, Brus.–Col. 2. ¶ Col.–Brus. 2, Brus.–Croy. 2.

Av = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4. = De Havilland 4, D.H.9. (etc.). F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. Sp. = Spad. Vi. = Vickers Vimy. Vu. = Vickers Vulcan. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc. :—Co. des Grandes Expresses Aériennes; Daimler Hire, Ltd.; Handley Page Transport, Ltd.; Instone Air Line; Koninklijkie Luchtvaart Maatschappij; Messageries Aériennes.

Aeroplanes for Bulgaria

THE Secretary in Charge of Commercial Affairs at Sofia reports that the Bulgarian Directorate of Posts and Telegraphs have invited tenders for the supply of 10 two-seater (including pilot seat) and two or three passenger 'planes (5-8 seaters). The latest date for the submission of tenders is March 25 next. Tenders should be addressed to the Department of Air Service at the Ministry of Posts and Telegraphs at Sofia. Further particulars can be obtained by British firms interested on application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W. 1.

Wilbur Wright Lecture

THE Royal Aeronautical Society announces that the eleventh annual Wilbur Wright Memorial Lecture will be read this year by Dr. Joseph S. Ames, Director of the Physical Laboratory, the John Hopkins University, Baltimore, Md., in the Theatre of the Royal Society of Arts, John Street, Adelphi, on May 31, at 5.30 p.m. The subject of the lecture will be "The Relation between Aeronautical Research and Aircraft Design."

Tickets may be obtained from the offices of the Society, 7, Albemarle Street, London, W. 1.

FLIGHT

THE NEW 8 H.P. "STATAX" ENGINE

Several Modifications Introduced in the Latest Model

IN our issue of November 23, 1922, we published a photograph and a brief description of the "Statax" engine, designed and manufactured by Herr F. J. M. Hansen, of Cologne. The photograph showed the experimental engine, and as a result of further experience certain modifications have now been introduced, some of which are visible in the accompanying photographs of the latest model.

The fundamental feature of the "Statax" is that the cylinders are placed with their open ends outwards, the cylinder heads resting on the cylindrical induction chamber, which takes the place of the crank-case of the ordinary rotary. The engine works on the two-stroke cycle, exhaust ports being drilled in the cylinder walls. The pistons have, of course, their skirt pointing outwards, and the reciprocating motion is obtained by flat steel straps running from pins carried by V-form connecting rods to points on centres different from that around which the engine revolves. Briefly, the system may be explained by saying that Herr Hansen has reversed the usual rotary engine arrangement. Instead of the crank-case revolving on the main crankshaft, and the connecting rods on the crank pin, in the "Statax" the crank case (which is merely an induction chamber) revolves on the crank pin, and the rings to which are attached the piston straps revolve on the crankshaft. The engine is overhung.

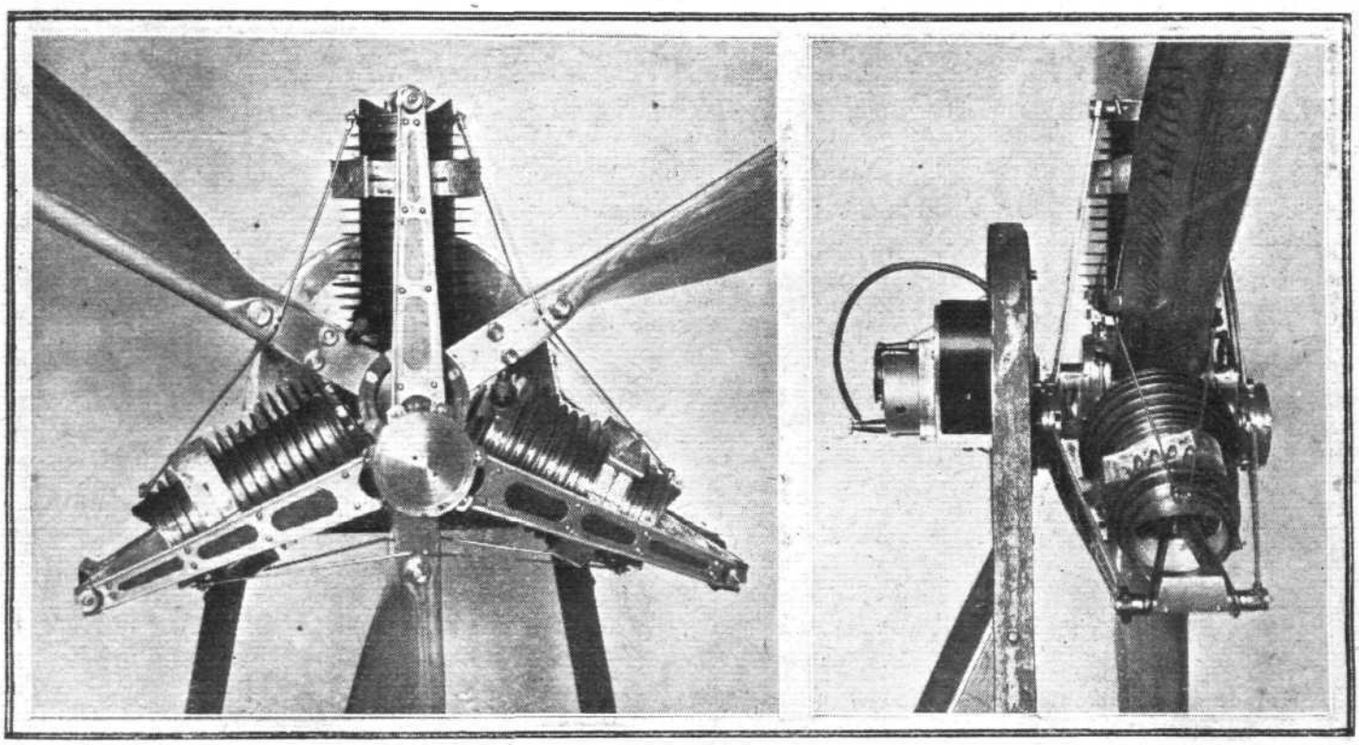
Apart from detail refinements, the new engine differs from the experimental model chiefly in that whereas in the latter there were external induction pipes, running from the induction chamber to inlet ports on the cylinder walls opposite the exhaust ports, in the latest type the explosive charge is delivered direct into the cylinder head by a short straight pipe connecting the cylinder head with the central induction chamber. Thus, while the exhaust gases leave the cylinder through ports near the outer end, the incoming charge is admitted at the inner end of the cylinder, and there should be less chance of the charge escaping through the exhaust ports. Also the short straight pipe gives a particularly unimpeded flow for the fresh charge. Centrifugal force is relied upon for carrying the charge to the cylinders.

We do not know what form of inlet valve is employed, but it appears probable that this consists simply of a cylinder having a slot cut in its wall, through which the mixture passes as each cylinder comes around. As there is room for a large area it should be possible to provide a gas-tight valve.

Owing to the fact that centrifugal force is relied upon for induction the engine will not run very slowly, but this is not, perhaps, a serious drawback in such a small power unit.

The new engine weighs 8 kgs. (17.2 lbs.) *including the propeller*, and develops 8 h.p. at a speed of about 1,600 r.p.m.

As regards the utility of an engine of this power, it might be supposed that another four or five h.p. would not have been out of the way. There is little doubt, however, that 8 h.p. is sufficient for hortizontal flight, although leaving but little for getting off and climbing. The majority of monoplane gliders weigh in the neighbourhood of 150 lbs. Add another 150 lbs. for the pilot and about 50 lbs. for engine, engine-plate, tank and fuel, and we arrive at a total loaded weight of 350 lbs. It may be assumed that the maximum L/D of the machine will be about 15, which would give a resistance of 23.3 lbs. If we assume that this is the resistance at about 40 m.p.h. (which, with a wing loading of 2 lbs. per sq. ft. would correspond to a lift coefficient of 0.24), the thrust would be, assuming a propeller efficiency of 70 per cent., 51 lbs., which is well in excess of the resistance. Thus the machine might weigh a little more, the resistance be a little higher, or the propeller efficiency a little lower, and still leave enough thrust for horizontal flight. The climb and get-off would, however, probably be rather indifferent. There is no reason, of course, why a catapult starting arrangement should not be used for such a machine, much in the same manner as it is for an ordinary glider



TWO VIEWS OF THE LATEST "STATAX" ENGINE: For a weight of 17.2 lbs., including propeller, this engine develops 8 h.p.

While on the subject of light engines, we should like to put in a good word for the "pusher" type of machine. In ordinary aeroplanes the tractor is now used to the exclusion of the pusher, but in this small size there is much to be said for the latter. For instance, the engine is considerably lighter than the pilot, and it therefore becomes a matter of some difficulty to "trim" such a machine; especially is this the case with a monoplane. It becomes necessary to do one of three things: raise the wing so high above the fuselage that the pilot can sit under it; cut out a large piece of the trailing edge for the accommodation of the pilot; or place the wing low on the body, as in the Udet. All these arrangements are open to objection for various reasons. On the other hand, the pusher facilitates trimming, gives an excellent view, and removes the pilot from the slip stream. With the "Statax" the pusher arrangement would have the further advantage of getting the spray of oil behind both pilot and wing.

What we have in mind is something after the style of the Koolhoven Bat. "Crow," with the tail carried on two beams running back from the wing, but with the engine placed behind instead of in front, the pilot sitting in a small nacelle. The tail skid would be placed under the stern of the nacelle. and the tail itself would never touch the ground.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ANNUAL GENERAL MEETING

THE Annual General Meeting will be held at the Club Premises, 3, Clifford Street, London, W. 1, on Wednesday, March 28, 1923, at 4 o'clock.

Agenda

1. Chairman's Report.
2. Election of Committee.

The following Members have been nominated for the nine vacancies on the Committee :—

Lieut.-Col. M. O. Darby.
Lieut.-Col. John D. Dunville.
Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.
Lieut.-Col. F. K. McClean, A.F.C.
Capt. D. G. Murray.
Lieut.-Col. Alec Ogilvie, C.B.E.
F. Handley Page.
Rear-Admiral Sir Godfrey M. Paine, K.C.B., M.V.O.
T. O. M. Sopwith.

(The number of candidates nominated not exceeding the number of vacancies, no ballot is necessary.)

3. To elect Vice-President and Council for the ensuing year. The following are recommended by the Committee :—

Vice-President.—The Duke of Sutherland.

Council.—S.A.I. Prince Roland Bonaparte, The Earl of Hardwicke, The Earl of Lonsdale, Admiral of the Fleet The Earl Beatty, G.C.B., O.M., G.C.V.O., D.S.O., The Right Hon. Lord Hugh Cecil, M.P., The Lord Howard de Walden, The Lord Montagu of Beaulieu, C.S.I., Admiral of the Fleet The Right Hon. Sir Edward Seymour, G.C.B., O.M., G.C.V.O., Admiral The Hon. Sir Edmund Fremantle, G.C.B., C.M.G., Air-Marshal Sir Hugh M. Trenchard, Bart., K.C.B., D.S.O., Sir David Salomons, Bart., Sir Basil Zaharoff, G.B.E., G.C.B., Count Henry de la Vaulx, The Right Rev. Bishop Welldon, Martin Dale, André Michelin.

4. To alter Rule 73 as follows :—

The Committee may associate with or affiliate to the Club other aeronautical clubs or bodies or individuals, on such terms and subject to such agreements as the Committee may from time to time approve.

H. E. PERRIN, *Secretary*

COMMITTEE MEETING

A Meeting of the Committee was held on Monday, March 19, 1923, when there were present :—Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P., in the Chair, Group-Capt. F. W. Bowhill, C.M.G., D.S.O., R.A.F., Mr. Ernest C. Bucknall, Lieut.-Col. M. O. Darby, Col. F. Lindsay Lloyd, C.M.G., C.B.E., Lieut.-Col. F. K. McClean, A.F.C., and the Secretary.

Election of Members.—The following new members were elected :—

Major F. C. Atkinson.
Alan E. L. Chorlton.
C. K. Macfadden.
The Duke of Sutherland.
John Woodhouse.

Racing Committee.—The report of the Meetings of the Racing Committee held on February 21 and March 8, 1923, was received and adopted.

Vice-President.—It was unanimously decided to recommend to the Annual General Meeting that the Duke of Sutherland be elected a Vice-President of the Club.

Committee Election.—The following nominations for election to the Committee were reported :—

Lieut.-Col. M. O. Darby, Lieut.-Col. John D. Dunville, Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., Lieut.-Col. F. K. McClean, A.F.C., Capt. D. G. Murray, Lieut.-Col. Alec Ogilvie, C.B.E., F. Handley Page, Rear-Admiral Sir Godfrey M. Paine, K.C.B., M.V.O., T. O. M. Sopwith.

Cup for "Lighter-than-Air" Craft.—Letter was read from Commander F. L. M. Boothby offering a Cup to be awarded annually for the most meritorious service to "Lighter-than-Air" Craft.

It was decided to accept the Cup, and a letter of thanks was directed to be sent to Commander F. L. M. Boothby.

Timekeepers.—The following Official Timekeepers were appointed for the year 1923 :—

F. T. Bidlake, J. H. Burley, T. D. Dutton, A. V. Ebblewhite, Col. F. Lindsay Lloyd, C.M.G., C.B.E., G. Reynolds.

Special Conference of the F.A.I.—The following agenda for the Conference to be held in Paris on March 20, 1923, was considered :—

Powers of Commissaires Sportifs.
Customs Carnet for Touring Aircraft.
International Atlas of Landing Grounds.

Lieut.-Col. M. O'Gorman, C.B., was appointed to represent the Club at the Conference.

Gordon Bennett Balloon Race.—The following entries were reported :—

Mr. Ernest Allen.
Mrs. John Dunville.

GROSVENOR CHALLENGE CUP

(*Under the Competition Rules of the Royal Aero Club.*)

With a view to encouraging low-power aeroplanes, Lord Edward Grosvenor has presented to the Royal Aero Club a Challenge Cup for a point-to-point race. The race will be held on Saturday, June 23, starting and finishing at Lympne Aerodrome, with turning points at Croydon, Bristol and Birmingham, a total distance of approximately 400 miles. In addition to the Challenge Cup, Lord Edward Grosvenor will present the winner with £100 and the second £50.

The aeroplane and engine, the latter not to develop more than 150 h.p., must be of British manufacture, and the pilot must be a British subject.

The following engines are eligible for this race :—

Le Rhone	80 and 110 h.p.	British made.
Gnome	80 and 100 h.p.	
Clerget	110 and 130 h.p.	
Renault	75 and 80 h.p.	
R.A.F.	108 h.p.	
Beardmore	120 h.p.	
Bristol Lucifer	100 h.p.	
Rolls-Royce Hawk	75 h.p.	
A.B.C. Gnat	45 h.p.	
Bristol Cherub	18 h.p.	

Other engines may be used providing they do not develop more than 150 h.p. and are accepted by the Royal Aero Club.

RACING COMMITTEE

A Meeting of the Racing Committee was held on March 8, 1923, when there were present :—Major-Gen. Sir W. S. Brancker, K.C.B., in the Chair, Commander James Bird, Lieut.-Col. M. O. Darby, Col. F. Lindsay Lloyd, C.M.G., C.B.E., Lieut.-Col. F. K. McClean, A.F.C., Mr. W. O. Manning, Mr. T. O. M. Sopwith, and the Secretary.

Schneider Cup, 1923.—The following entries were reported :—

France	Three Competitors.
America	Three Competitors.
Italy	Two Competitors.

It was decided to accept entries from British competitors up to August 1, 1923, and in the event of more than three being made, the Club would hold eliminating trials to select the three competitors to represent Great Britain.

It was decided to survey several courses in the vicinity of Cowes, including one round the Isle of Wight, and the Supermarine Aviation Works, Ltd., promised to place a machine at the disposal of the Committee for the purpose.

Grosvenor Challenge Cup.—The Secretary reported that Lord Edward Grosvenor had offered to the Club a Challenge Cup, with a first prize of £100 and second prize £50, the race for 1923 to be a handicap over a circuit of approximately 400 miles, starting and finishing at Lympne Aerodrome.

The Secretary was instructed to thank Lord Edward Grosvenor for his kind offer, and to inform him that the Committee were glad to accept the same.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN Secretary.

FLIGHT

THE AIR ESTIMATES

IN recommending the Air Vote to the House of Commons on March 14, Sir S. Hoare, Secretary of State for Air (Chelsea, U.) said the past year had been, on the whole, uneventful so far as the Air Service at home was concerned, though steady progress had been made. They had been going on with the task, always a very difficult task, of building up a permanent Air Force from the very beginning. At the end of the War there was no permanent Air Force. There had been difficulties in connection with recruiting, training, and equipment, but he hoped that they would gradually surmount them. They had found during the last twelve months that they were getting an excellent type of recruit in adequate numbers. Their various training schemes had been going ahead, and perhaps the most noticeable event in that connection had been the opening of the Air Staff College at Andover. At the end of the War the Air Force was housed exclusively in war huts and in temporary buildings. The task of making these huts habitable and reconditioning them, and, where possible, replacing them by permanent buildings, had meant an expenditure of a good deal of money.

Air Command in Iraq

There had been one or two conspicuous events abroad during the past year. First and foremost was the fact that for the first time in the history, not only of this country, but in the history of the world, they had started an independent Air Command. In Iraq today there was no longer a general officer commanding the troops, but there was an Air officer. They had not been able to make the reductions in the ground troops that they had hoped. That had been exclusively due to the fact that they had not yet been able to make peace with Turkey, but when that peace was made they would be able to get down to the lines suggested by the Cairo Conference, under which our garrison in Iraq would be eight squadrons and a very greatly reduced number of infantry troops. Every impartial enquirer who had been to Iraq, or who had looked into this state of affairs without prejudice, was emphatic in the view that this experiment in the Air Command was working very well.

Economy of Air Operations

They believed that it would save a great deal of money. Over and over again, even during the short time in which this Air Command had been in existence, they had been able by well-directed air operations to avoid expense both in men and money which would have been entailed by ground military expeditions. It had been possible to supply an armoured car column of 16 vehicles, with stores, spares, petrol, and rations for 17 days entirely from the air. It had been possible to evacuate 67 persons, military and civil, by air to a point 70 miles distant in the space of little more than two hours. Only the other day two companies of an Indian regiment, amounting to over 300 men, with Lewis guns and 30,000 rounds of reserve ammunition, were taken by aeroplane to a disturbed district 65 miles distant within 24 hours, at a time when the roads were impassable, and it would have been otherwise impossible to move troops at all. It had been possible to mark out by the longest furrow in the world—470 miles in length—the desert route from Amman to Baghdad, and keep a regular service of military aeroplanes carrying mails and passengers between Cairo and Baghdad. These were very interesting experiments. If this Air Command was as successful as they thought it was going to be, many of the most difficult problems connected with Imperial communications and the policing of the more distant parts of the Empire would have been solved.

Control without Occupation

The problem they were trying to solve was that of "control without occupation." If they could succeed, the effect it would have upon Imperial communications and upon garrisoning of various parts of the Empire could not be exaggerated. In a lesser degree they were attempting the same problem in Palestine, Trans-Jordania, Somaliland, and at Aden. He believed that in India they would see development upon the same line. All evidence went to show that in India, the value of air operations was being better and better realised. The deficiencies in equipment which caused such grave concern last summer were being made good. The Air Officer Commanding in India had now direct access to the Viceroy. The headquarters of the Air Force had been moved into close proximity to the headquarters of the Army. There was one other field in connection with foreign operations to which he wished to draw attention, the Dardanelles. The air units there had succeeded, amongst other things, in showing that in active service soldiers, sailors, and airmen could all work harmoniously together. They had also shown how extremely adaptable to the conditions in which they found themselves were the men of this new arm. No. 4 Squadron was a squadron allotted for co-operation with the Army, yet twelve of its machines were erected and flown off the deck of an aircraft carrier within 53 hours of its arrival in the Dardanelles. Later, it was found desirable to detach some of the seaplanes from their carrier ships and place them in a shore aerodrome, to co-operate with the artillery.

Home Defence

Turning to the question of air defence at home, he said ever since he had been Secretary of State for Air he had been conscious of a growing uneasiness in the public mind as to whether our air defence was adequate or not. The Press was full of these anxieties. The House of Commons was obviously nervous, for week by week he was asked questions as to how this or that part of our Air Force compared with the air strength of other Great Powers. He proposed, therefore, to give the House the facts and the figures so far as he could, and to ask for the help of all hon. members—for this was no party question—in their attempts to arrive at a sound and wise air policy. Before he gave the figures, he wanted to make one overriding observation. If he gave a comparison of our strength with the French strength, no one here or in France must form the impression that for one moment he believed war even remotely possible between the two great Allies. No Frenchman should certainly suspect him of any such unnatural idea, for he did not suppose that any private member in the House made more constant efforts than he did in the last Parliament to bring about a guarantee treaty between ourselves and the French.

He quoted France, not because it could be even remotely imagined that hostilities could break out between the two Allies, but because of all the Great Powers, France had most fully developed its air power. In November, 1918, the British Air Force consisted of 30,122 officers, 263,410 airmen, and 3,300 service aeroplanes. Today it had 3,071 officers, 27,499 airmen, and 371 first-line aeroplanes, excluding reserve and training machines. As regarded the French, it would be misleading to make a comparison of personnel, because so much of the French aviation personnel was taken from the Army. The only correct comparison was that of machines. In November, 1918, the French had 3,600 service machines, and today they had 1,260. While our peace air service was only one-tenth of our war air service, the French air service of today was one-third of what it was in 1918. Whilst two-thirds of the British machines were overseas, three-quarters of the French machines were in France. Of our 34 service squadrons, two of which were included in the expansion scheme, to which he was going to refer, 18 were in Egypt, the Mediterranean, and the Near East, six were in India, four were allocated to naval work at home, and one was allocated to Army work at home. That left five service squadrons in Great Britain for home defence. Of those five, only one consisted of fighters, and four were bombers. In France, there were 32 fighting squadrons and 32 bombing squadrons.

In 1925

In 1925, the French programme, which had already been discussed several times in the French Chamber, would presumably be completed. That would mean that whilst France would have 2,180 service machines, we, even with our whole expansion scheme of this year, would have only 575. During 1922, there were 200 machines, civil and military, built in Great Britain, and 3,300 in France. He believed the French figure was divided into 300 civil and 3,000 military. Whilst the number of men employed in the French aircraft industry was 9,250, the number employed in the British aircraft industry was only 2,500. He was fully prepared to admit the great differences between the position of France and Great Britain, but even so, the disparity was overwhelming. While it was inconceivable that these two great Allies would ever embark on hostilities with each other, the question must arise, How was it possible to justify the fact that one of them had an Air Force only a quarter of the size of the other ?

Standard of Strength and Cost

He would ask the attention of hon. members to that question, and he would suggest one or two considerations before they came to a definite answer as to what the standard of the British Air Force should be. They should, first of all, be clear in their minds as to what responsibilities they wished to impose on it. In the past, the Navy and Army had both had definite Imperial and national responsibilities entrusted to them. It was only in the last few months that definite

responsibilities, in the shape of responsibility for home defence against air attack and the independent Air Command at Iraq, had been entrusted to the Air Force. They should be clear, too, as to whether or not other responsibilities should be entrusted to this new arm, and, consequently, they should also consider the cost. In matters of national defence the question of cost was not a final factor, but it must obviously be taken into account. In 1913-14 the Navy Estimates were £48,809,300, and the Army Estimates £28,220,000, about £77,000,000 in all. This year the Navy Estimates were £58,000,000, the Army Estimates £52,000,000, and the net Air Estimates £15,000,000. If they decided to apply a one-Power standard to the Air without making corresponding reductions in the Estimates of the Army and Navy, it would mean an immediate increase of £5,000,000, but an eventual increase, in order to keep pace with the progress of other great Powers, of £17,000,000.

Taking the net figure this year at £18,000,000, applying a one-power standard would increase the expenditure to £23,000,000 at once and to £35,000,000 eventually to keep pace with the growing programme of other Powers. For a one-power standard it might be assumed that the cost would be £35,000,000 a year net and our total defence Estimates would be over £145,000,000. The House should note this figure of £17,000,000, for it would show that it was possible to increase our Air Force four-fold with an expenditure that was little more than double the present expenditure. He suggested, however, that from every point of view, of economy, of humanity, and of common sense, they should try to avoid, if it be possible, another and a new lap in the old race of armaments.

National Defence Inquiry

On this account he particularly welcomed the comprehensive inquiry that was to be undertaken by the Committee of Imperial Defence into the whole problem of Imperial and national defence. He had been long enough at the Air Ministry to say that they could not isolate the problems of one Service from the problems of another Service. The problem must be treated as a whole, and he looked to this inquiry to give him guidance in answering the kind of question he had put to the House. What Imperial responsibilities, for instance, was the Air Force to undertake? What was to be its relation to the other fighting Services? Was there some standard, like the one-power standard, at which they should aim, and, if so, could they make the equivalent economies in other fields of defence? He was quite convinced that only by comprehensive inquiry could these questions be satisfactorily answered, and that only by the help of all sections of the House could they agree on a national Air policy that was neither excessive nor inadequate. Pending the report of this Committee and the decision of the House, they had got to exist and to make the most of the resources at their disposal, and so long as they could not have quantity, they must concentrate on quality. The Air Force as it was today was a very small force. It must be an Air *Corps d'élite*, and it was on that account that, judged by the test of expenditure in comparison with its size, it cost a considerable sum of money.

Training and Research

All the more because it was a small force they had to concentrate on such problems as the problem of training. He had been very much struck since he had been connected with the Air Ministry with the variety and magnitude of the training which was now being given to air officers and airmen. There was, too, the field of research. It seemed to him that the smaller the Air Force was the more important was the question of research. With the resources at their disposal, they were trying to hold the balance between pure and applied research, and various organisations connected with research seemed to be working in very close and friendly co-operation.

Perhaps at some future date he might have the opportunity of going in greater detail into this very important branch of the subject, but today he would simply say that they were experimenting in particular at the present moment on such questions as the control of aircraft at low speeds, the use of crude oil instead of petrol for fuel, metal construction, and the many problems connected with economy. Research on helicopters had been going on for a considerable time. It was now approaching the stage of full-scale experiment, and he proposed, in the coming year, to advertise prizes to the amount of £50,000 for a competition in connection with this field of experiment. He also hoped to be able to make a small grant for the encouragement of gliding. If our small force was to expand quickly, the problem of reserves was obviously one of vital importance. During the year the Ministry hoped to have an average strength on the reserve of about 500 hundred officers and between 7,000 and 8,000 men, and were preparing a scheme for enabling officers and men of the reserve to train with a certain number of selected aviation firms. It might be necessary in the future to supplement those provisions by setting up some kind of Auxiliary Air Force, but that was a question for the moment undecided. Apart from that they hoped to build up in the course of the next two or three years a reserve of 1,000 officers and 12,000 men.

Home Defence and Naval Co-operation

He was asking for 15 additional Regular squadrons for home defence and for three additional squadrons for co-operation work with the Navy. The initiation of the first part of the programme of expansion was due to his predecessor, Capt. Guest, who obtained last summer the approval of the late Government and the general assent of all parties in the House to the increase of 15 Regular squadrons. During the next twelve months the Ministry hoped to have an equivalent of seven or eight of these squadrons formed. They hoped, further, to have the whole scheme completed during 1925. Roughly estimated the cost would be about £2,000,000 a year.

The House should mark the increase for the naval units. He had seen it said, not, he freely admitted, by anyone at the Admiralty, that the Air Force had starved the Navy in the matter of aircraft. Quite apart from the merits of the question of control, he thought any hon. member who looked impartially at the history of the last two or three years would say that that was not so. The Geddes Committee recommended that the squadrons that were co-operating with the Navy should be reduced from six to two. Not only had the Ministry refused to make this cut, but they were actually increasing the naval squadron to eight, and, moreover, during the last two or three years, so far as he knew, they had never failed to carry out the naval requirements. A great part of their research work had been devoted to naval work, which today was many stages ahead of the naval air work of any other Great Power. Whether it was in the matter of deck-landings, of torpedo attacks from the air, or long-distance flights by flying-boats, our naval work was stages ahead of the naval air work of any other great naval Power, and the fact that the other Great Powers recognised that that was so was shown by their frequent requests for air information and by the further fact that a Great Power like Japan actually came to us for instructors in this particular branch of air work. The Army was well satisfied with what had been done for it during the past year.

Civil Aviation

He believed that civil aviation could in future be a very valuable asset to us, an asset which it was the more important to develop in view of the fact that our military Air Force, at any rate at present, was comparatively weak in comparison with the Air Force of other Great Powers. But he should not like hon. members to think that civil aviation could be substituted for military aviation any more than the mercantile marine could be a substitute for the Navy. He believed that civil machines would tend to diverge in type from military machines, but, however much civil aviation was likely to develop it would never provide a first line of defence necessary to meet the shock of air invasion. As to aerodromes there would be a number of important questions coming up to be settled in the near future as to what kind of facilities the State ought to give to civil aviation. In the meanwhile, the Air Ministry was, by international agreement, maintaining two civil Air Force ports—Lympne and Croydon. As to Croydon, the Civil Aviation Advisory Board had come to the conclusion that it was the site of those available that could most cheaply and easily be developed as the principal London aerodrome. Accordingly, he had included in the Estimates the cost of certain preliminary steps that might have to be taken for development, and he intended to proceed upon the general basis of the Committee's recommendations so far as they concerned Croydon.

Cross-Channel Transport

The late Government agreed to subsidies amounting to £600,000, at the rate of £200,000 a year for three years, for assisting cross-Channel aerial transport. Judged by national results, the subsidies had not produced the development of civil air transport or the reserve of pilots and machines that some people had expected. If the subsidies were regarded solely from a national point of view, £600,000 would have been spent at the end of this year, and only 18 pilots and 20 civil machines were engaged upon the work. The Hambling Committee had come to the conclusion that subsidies of some kind were necessary for a further period if civil aviation was to continue to exist, but that if they were to be of value to the nation, there must be security of tenure in the matter of

subsidies and in the matter of facilities for a period of not less than ten years, and the subscription of one million of private capital. The Committee also came to the conclusion that as things were now, there was not sufficient business for a number of small competing companies, and that all that was happening under the present arrangement was that the State, that was financing, in fact, all the companies, was merely competing against itself. The only real competition came from the French heavily subsidised companies. France was spending 100,000,000 francs a year on civil aviation, and not less than 50,000,000 francs on subsidies. For these reasons, the Committee came to the conclusion that development could only be possible by means of one strongly supported organisation. This did not mean that they desired to criticise the existing companies. They had done useful pioneer work. The Committee, therefore, recommended the Government to give not less than a million in subsidies, to be spread over the next 10 years, to any responsible company that could raise the capital and undertake the work, provided that a corresponding amount of private capital was forthcoming. The key to the problem was the subscription of private capital. Unless there was a big amount of private capital behind the undertaking, there would be no development and no incentive to progress. The company or companies would continue to exist on their subsidies, and any big development of civil aviation would be out of the question. If private capital was to be subscribed, there must be a continuance of subsidies for a period. The House did not like subsidies, nor did he. Without subsidies, however, it was impossible to meet the subsidised competition of the French firms.

The Government had considered these proposals, and he was authorised to state, on their behalf, that the Air Ministry was prepared to negotiate with any responsible person or persons upon the basis of (1) the subscription of £1,000,000 of private capital; (2) a State subsidy of not more than £1,000,000 spread over 10 years; and (3) a satisfactory settlement of a number of details connected with the operation of the Services, as, for instance, the use of the machines and the pilots in times of national danger. The present contracts had twelve months to run, so there was that period for negotiation.

Mr. T. Griffiths (Pontypool, Lab.): Will the Handley Page, Daimler, or Instone Line people have any preference, as they have been pioneers, and have some knowledge and experience of the work?

Sir S. Hoare said that he could not say anyone would have preference, but account would certainly be taken of the fact that these firms had been pioneers, had done useful work, and that it was desirable, from every point of view, that they should have a part in any arrangement for the future. If these companies could fulfill the necessary conditions, so much the better.

Mr. T. Johnston (Stirling and Clackmannan, Lab.): As one company?

Sir S. Hoare: Yes. In the meanwhile no action would be taken without the House having an opportunity of discussing the question. His personal view was that it was a choice between some such scheme as this and running the risk of civil aviation coming to an end altogether.

In 1920 the Admiralty, in correspondence with the Air Ministry, came to the conclusion that, in view of the financial stringency, it was not possible to go on with an airship policy. He was glad to say that that question was being reopened, and was at the present moment being considered by the Committee of Imperial Defence. The Admiralty were very rightly emphasising the great value of airships from the point of view of long-distance naval reconnaissance. The Air Ministry also thought that airships could be very valuable from the point of view of troop carriers, and possibly, in the future, aircraft carriers. Moreover, it might well be that airships provided the best means at the moment of starting an Imperial air route. He very much hoped that, although he had put nothing in this year's Estimates for airships, during the ensuing twelve months they might be able to develop an airship policy, whether it were by a commercial undertaking or by a policy of military research.

He ended by asking members to remember the very great difficulties with which the Air Force had been faced. It was a young Service—young in the age of its officers, young in the period of its lifetime; but if members would, without prejudice, judge it on its record in the past and by the results it would achieve in the next few years, he believed it would stand successfully the high standard of criticism that could be applied to the older Services or any of the great Departments of State.

THE DEBATE

Capt. Wedgwood Benn (Leith, L.) said he would address some questions to the First Lord of the Admiralty. There were those who thought that in the course of the last two or three years there had been a steadily growing agitation—he did not say inspired by the Admiralty, but centring round the Admiralty—to disintegrate the Air Force, and many of those who remembered the War and the lessons of the War were strongly opposed to any policy of the kind. First, he wished to ask the First Lord about the news concerning what was called the Burney airship scheme. Apparently some negotiations had been going on, notwithstanding the fact that during the War and after the War, the Admiralty displayed very little interest in the air at all.

At the beginning of the War there were only five small airships. In March, 1915, the first "S.S." appeared, and at the Battle of Jutland there was one seaplane in the air, and in 1920 the Admiralty decided they would not proceed with the provision of air material at all. That was the past history of the Admiralty in dealing with the question of the Air Service. Now they were inspired by a desire to be of some assistance and to have a naval air arm, whatever that might mean. The hon. and gallant member whose name was associated with this scheme explained at the Air Conference that they went to the Admiralty because the Admiralty had plenty of money, and it was no use going to the Air Ministry because the Air Ministry had not got any money. That was an extraordinary explanation of the distribution of the work of defence between well-defined Departments. Was the service in question intended to deal only with war situations? Surely the Admiralty was only concerned with the war side of the question. He then read an extract from Mr. Winston Churchill's book, criticising British airships. "If they were of no military value except to transport troops, and possibly as aeroplane carriers, services intimated by the Secretary of State, certainly they could not become in their war capacity under Admiralty control, because these transportations of troops or quelling of disturbances would always be done in distant lands, such as Iraq for instance, where the Admiralty had no access with its ships whatever. If these airships were to be of use, they must be of use in a civilian capacity, and nobody had denied that there were possibilities of useful service for commercial purposes to be rendered by them, but if they were a purely civilian undertaking, what on earth had the Admiralty to do with it? They would have to use the same aerodromes as existed already to some extent, and the same supply depôts for fuel, they would have to buy engines of more or less the same type as the aero-engine, and on the routes which they pursued there would have to be arranged radiating services to go with the long distance of the Zeppelin.

Supposing a Zeppelin went 1,000 miles without stopping, you must have where it stopped a radiating service which would bring the passengers or goods to that spot, and not only that, but between the two stations you must have a stopping train, the Zeppelin being the express. These stopping services and radiating services would have to be supplied by aeroplanes, and not airships at all, and so the plan apparently was that the Admiralty should subsidise a civilian airship, which would duplicate the work and have to work side by side with the Department of the Air Ministry which was concerned with a civil aviation route and supplying all aeroplanes, material, aerodromes, maps, charts, signals, and so on, for that route. If the House examined this in an impartial spirit, he was sure that nobody could say that was Admiralty work.

Two years ago the then First Lord of the Admiralty, Lord Long, had said quite clearly in the House that there was no intention whatever on the part of the Admiralty to attempt to depart from the clear and definite policy laid down, that the Air Ministry was to be an independent Department. Was that statement true today? Was it true today that the Admiralty accepted the existing policy of the Government—that the Air Ministry should be in supreme and unified control of the whole of the Air Service? They had all read in the statement of the First Lord a very surprising announcement. He said the Admiralty were training 140 officers and 1,000 men in anticipation of a decision of His Majesty's Government empowering the Admiralty to man with naval personnel the air arm of the Fleet. He did not think such an amazing statement had ever appeared in an official document before. The House allotted money and defined duties to the various Departments, and, for the First Lord to announce that he was keeping men in reserve for a purpose which had not been authorised, paying them all money which might not be authorised, anticipating a decision of the Government or of the Imperial Defence Committee which might never be made, was a most amazing state of affairs. It was very interesting to observe that there were 1,000 men and 140 officers of the Navy suitable for manning the air arm of the Fleet, because

it was not two years since the Air Ministry asked the Admiralty if they could find 100 officers who were willing to come forward and volunteer for air work. When 100 were asked for by the Air Ministry, only nine volunteered, and, of those, two were unfit, while of the remaining seven, four were "axed" out in pursuance of the recommendations of the Geddes Committee, so that when you asked for 100 men to perform work which the House had approved there were only nine men, who melted away by being unfit or by being cleared out, but when it was a question of manning the air arm, whatever that might mean, in anticipation of a decision, there were 1,000 men and 140 officers who were to be placed in reserve for this purpose.

The naval conception of flying was that it was a little thing you did in your spare time; you were a good sailor, and if you had time you became a good airman as well. What were the services to be rendered? They were air fighting, bombing, torpedoing, reconnaissances, and spotting. Spotting required the closest *liaison* between the man doing the spotting and the gunner firing at the back, but reconnaissance, bombing and fighting were pure air services. Moreover, if you did cut off the naval air service you would first of all cut off a great number of people serving in it from a general experience of air work, and thereby reduce the number of men who might be qualified to serve in an air staff college, and you would reduce the number of men available for a reserve of pilots, because a man's whole career was spent in flying in connection with the Fleet, or in returning to his duties with the Fleet, instead of a number of men being passed through, taught to fly, and forming in future a reserve of pilots.

Turning to the speech of the Secretary of State on the Air Estimates, he would direct the attention of the Secretary of State, and that of hon. members, to the statement in the Geddes Committee Report to the effect that it was necessary to substitute the Air arm for the Navy and the Army in the performance of certain definite and specified duties; that was to say, that the Air should gradually supersede the Army and Navy in fields of endeavour where it could be appropriately employed. It was obvious that if this was to be done it would never be done with the goodwill either of the Admiralty or the War Office.

It was obvious that we must have a higher authority which could take all three Services and control and co-ordinate the work between them.

There were other functions which should be set aside as work definitely to be undertaken by the Air Service, as, for instance, the patrolling of trade routes and the repelling of invasion by sea.

Further than that, the Air Ministry's work was the repelling of invasion by air. That was entirely an Air Ministry task. Invasion by air must be met by finding and bombing the munition and other centres of the enemy, the aerodromes, and so on, not by waiting for the aeroplanes to come here.

The Air was now recognised as being our first line of defence. That involved a consideration of the element itself, the mechanism employed, and the mentality of those who used that mechanism. The airman should not depend for his career upon the Admiral or the General. He must be single-minded. His qualifications, ambitions, and goal should be one: his reward to serve his country in the air. He could not have his prospects of advancement jeopardised by being under the control of another Service.

With regard to civil aviation he thought that the real problem for the Air Ministry was how to teach the people of this country to regard the element, that is the air, as as much their element as the sea now was.

Major-General Sir F. Sykes (Hallam, U.) said that, speaking in the House for the first time on the subject of national and Imperial defence, he held that the question of a sound defensive air system was indissolubly linked-up with international affairs and social problems. He started from the basis that this country did not want war, and that we would do almost anything to ensure peace. Our men and women won the War, and in so doing hoped they were winning the end of war. The greatest gift for all classes in all countries would be the elimination of war. But, if war could not be eliminated, root and branch, they might hope that by some machinery such as the League of Nations there should be established a definite and general reduction of armaments. Our Navy and Army had given a good lead in the direction of definite reduction of armaments. Personally he thought that the lead of the Navy was not too small. He disagreed with the First Lord in saying that he felt that possibly next year it could not be reduced so much. He felt sure it must be reduced still further.

We must remodel our systems; the safety of the Empire now rested not on one of the three Services, but upon the co-operation of the three. He was not one who thought that the time of the Navy and the Army would shortly cease, but he thought that the air had opened up a new phase or sphere of operations in war. The air would gradually come to have a preponderating rôle in defence. The air would help to avoid conflicts as much as or more than it would ensure victory. We no longer retained the lead in the air, and he was sure that the House would agree that at this juncture a misguided air policy would be almost a national disaster for the future. He urged the need of a "long-dated" policy and of the correlation of the various Services with a view to greater economy and efficiency. There should be unity of control for the three Services, and there should be a unified joint Staff College for the senior officers of the three Services.

One danger was that if the Navy and the Army got their own tactical units there might be a desire in some quarters to dispense with the development of independent long-range air action, and there might be a tendency for that independent action to be reduced to very little or nothing. It was in regard to such independent action that he wanted to emphasise the fact that we should concentrate. There was a deep-rooted feeling on the part of the Air that the proposals of the other two Services were the thin end of the wedge to the assimilation of the bulk of the Service or activities, and their opinion was that that would be a very dangerous step to take from the point of view of progress and from the point of view of defence efficiency as a whole.

The new Committee, which was to consider the air question, could only operate with real success if it were an independent and a very strong Committee. He hoped also that the Air Ministry would join in the scheme for making a naval base at Singapore. To establish an air depôt there would greatly assist an air route to Australia.

Mr. Amery, First Lord of the Admiralty (Sparkbrook, U.), replying to points raised by Capt. W. Benn, said that a sub-committee of the Committee of Imperial Defence had taken the view that airships had a value in more than one direction. The Admiralty came to the conclusion that that form of reconnaissance might be of great value in minimising the work of its light cruisers. The question as to who was to pay and who was to control was obviously one which could only be decided by the Committee which was investigating the relations of the three Services. As to the question of the 1,000 men and 140 officers retained by the Navy, that particular personnel, whoever might control it, would have to be considerably enlarged during the coming year, in view of the fact that three new aircraft-carriers would be completed during the year. There would be considerable expansion of that service. In view of the fact that the late Cabinet had undertaken to appoint a Committee to settle this question and that a decision might be expected either before the end of the financial year or very soon afterwards, it would surely be the height of unwisdom and of cruelty to dismiss large numbers of men who might be wanted so soon. The compensation which would have had to be paid to them would have amounted to nearly £100,000.

Mr. Batey (Spennymoor, Lab.) urged that the aim of the Air Ministry should be to build up not only a force capable of home defence, but also something which would have the same relation to the Air Force that the mercantile marine had to the Navy. There should be not competition but co-operation between the three Services in the matter of the Air Force. He moved as an amendment: "That pending the consideration as to the advisability or otherwise of the complete co-operation and co-relation of the Army, Navy, and Air Force, this House is of opinion that immediate steps should be taken to eliminate unnecessary expenditure consequent upon duplication of staffs or the elaboration of various and competitive plans dealing with the problems of air defence over land and sea." Mr. Rose (Aberdeen, N., Lab.) seconded the amendment.

Lord H. Cecil (Oxford University, U.) found it difficult to understand a policy of making preparation for defence sufficiently large to be costly and not sufficiently large to be efficient. He understood that, broadly speaking, the aeroplane was not considered a formidable defensive weapon. If the offensive was accordingly the only defensive, the question we really had to consider was whether our Air Force was strong enough to inflict serious crippling damage on a country with which we might be at war. As nobody dreamed of war with France, and other nations near enough to be formidable in the air were much exhausted, he thought the present duty of the Air Ministry was to study a severe economy and spend as little money as possible. He hoped the integrity and homogeneity of the Air Force would be maintained. As to co-operation between the three great Services, he agreed that the real solution of the problem was in some general co-ordination of the whole defence of the country. He was inclined to

think we were not likely to see a Ministry of Defence in the near future, and in the circumstances of the time it was far better to retain unimpaired the homogeneity and independent organisation of the Air Force. No one could dispute that if there was an Air Force working with the Navy for strategic purposes the command must lie with the naval officer in command, but to say that the airmen who worked with the Navy should be naval officers was insanity. It used to be said that the letters "R.N.A.S." stood for "really not a sailor." If the Navy had its own Air Force much the same feeling would grow up again, and the Air Force would be composed partly of disgruntled enthusiasts and partly of disheartened failures.

The main dominating function of those who co-operated with the Navy was aerial, and not naval. All these theories concerning a separate naval air force overlooked one of the great features of human nature, which was the professional outlook. The air was as truly a profession as any other. The airman was even more different from a soldier or sailor than a soldier and sailor were different from one another. He hoped that the Committee which was examining the subject would resist any proposal by which the professional unity of the Air Force was broken. In the meantime the great task for the Air Ministry was research. In particular, he hoped that the problem of whether there were no real means of defence against aeroplanes would be more thoroughly and systematically considered.

Lieut.-Col. Moore-Brabazon (Chatham, U.) said that one of the first steps towards a Ministry of Defence, which so many members advocated, was to put the three Services on an equal footing, and he noted that the Air Minister was not a member of the Cabinet. With regard to civil aviation, he held that its chief value was that it gave us the necessary manufacturers for the expansion of the flying force when it became necessary.

The question of whether the Navy was going to have its own Air Force or not was becoming a hardy annual. We had it year after year. There had been inquiries by experts, and the thing had been decided. Personally, he had such faith in the answer that he did not mind whether there was an inquiry once a week for the next ten years. The result would always be the same.

The grievance which the Navy brought forward was a little obscure. Our naval work was the best in the world, and we had better flyers than anybody else, and a better type of machine. The Washington Conference only allowed four aeroplane carriers, and the Air Ministry had given the Navy more machines than they could put into service. He could not understand what they were complaining about. Years ago the Navy did not realise the power and the future which the air had in store, and they now seemed to realise it too much. Even sailors themselves advanced the theory that in 30 or 40 years ships would be unnecessary, and they drew this curious conclusion, that because ships would not be necessary that was a reason for doing away with the Air Force, though the logical conclusion would be that that would be a reason for doing away with the Navy. We had this curious propaganda which seemed to be spreading through the country, as to lifting the Navy into the air. For instance, we had this in the *Morning Post*: "If the Fleet has to be gradually lifted out of the sea into the air those best suited to conduct this policy are those who have made a study of and have lived upon the sea. He would point out that there was a Navy of the Air. That was the Air Force, and that was what it ought to remain. The Admiralty was after the whole hog. They were out to get the whole of the Air Force to themselves. What we were afraid of was that this agitation to get control of the Air Force was the thin end of the wedge, and we knew the immense power of the Admiralty, the biggest bureaucracy in the world. When they got their feet in, they would do the same as when they were in partnership with the Royal Air Force. They would duplicate the training stations, they would have separate contract departments, and the two departments would be pitted against each other and have to pay enormous prices.

Viscount Curzon (Battersea, S., U.) said the Navy required an air service for purely naval purposes, and nothing else. The Navy had no desire to get rid of the Air Ministry; on the contrary, they recognised its necessity as an essential part of our national defence. He hoped that the new Committee would go into the whole matter with full knowledge of the Navy's case, and come to a decision on the merits of the question.

The King's Levée

THE Levée held by H.M. the King at St. James's Palace, on March 6, was attended by Air Chief Marshal Sir Hugh Trenchard, Principal Air Aide-de-Camp, Sir Samuel Hoare, Secretary of State for Air, Sir Richard Glazebrook, etc. Amongst those presented to His Majesty were the following:—Lieut. Aviateur Chevalier Willy Coppens, Capitaine de Corvette Sablé, Major Nobile C. Graziani, Flying-Officer G. D. Ashby, Flying-Officer V. G. Bennett, Flying-Officer W. A. Buscarlet, Flight-Lieut. L. H. Cockey. Flight-Lieut. G. R. Deacon, M.C., Squadron-Leader W. A. Duck, O.B.E., Lieut. J. C. Holland, D.F.C., Wing-Commander A. H. Jackson, Flight-Lieut. F. E. Johnson, Flying-Officer M. G. Trapagna-Leroy, A.F.C., Flying-Officer B.A. Lewin, Flying-Officer E. M. Ling, Flight-Lieut. F. J. Linnell, Flying-Officer R. D. Macrostie, M.B.E., Flight-Lieut. A. S. Maskell, Flying-Officer H. W. Nicholl. Flying-Officer A. H. Paull, Squadron-Leader J. H. Peek, Flying-Officer W. R. Rogers, Wing-Commander G. H. Thomson, O.B.E., etc.

Amonst those who attended the Levée held by H.M. the King at St. James's Palace, on March 13, were Air Chief Marshal Sir Hugh Trenchard, Principal Air Aide-de-Camp, Sir Samuel Hoare, Secretary of State for Air, Air Vice-Marshal Sir Wm. G. Salmond, Air Vice-Marshal O. Swann, and Wing Commander L. Greig. The following were amongst those presented to the King: Flying Officer Eric H. Alliott, Flight Lieut. Archibald J. Briddon, Flying Officer Edmund A. Britton, D.F.C., Flight Lieut. Harry G. Bushell, Flying Officer Basil R. Carter, Flight Lieut. Frank E. Coates, Flying Officer Reginald M. Davy, Flying Officer Noel H. Jay, Flight Lieut. Claude H. Keith, Flight Lieut. Athol W. Mylne, Wing Commander Hazelton R. Nicholl, O.B.E., Flying Officer Francis A. O'Brien, Wing Commander Richard E. Peirse, D.S.O., A.F.C., Flying Officer George E. Pyne, Capt. Alec Reid, D.F.C., M.P., Flying Officer Alick C. Stevens, Wing Commander Arthur T. Whitelock, Flight Lieut. Ryder Young, etc.

Air Connection between the Little Entente Capitals

THE Czecho-Slovak News Service announces from Belgrade that the Jugoslav Transport Ministry has concluded an agreement with the Franco-Rumanian Air Transport Co. for the purpose of establishing a regular service between Paris and Belgrade, as well as between the three Little Entente capitals, *i.e.*, Prague, Bucharest, and Belgrade. For over two years the company has been maintaining a regular air service Paris-Prague-Bucharest, which will be extended to Belgrade, and later, when conditions permit, to Constantinople. In this connection it is interesting to note that Prague is developing into a big aerial centre. In addition to being one of the chief landing-places of the above service, it will soon be connected with London, Berlin, Vienna and Budapest. The journey London-Prague will take only about seven hours.

Cheaper Cross-Channel Flying

THE possibility of reducing the cost of flying from London to Paris to 2*s.* per mile for ten passengers instead of the present cost of from 4*s.* 6*d.* to 5*s.* for eight persons was referred to by Mr. H. James Yates, of the Civil Aviation Advisory Board, speaking at Birmingham on March 14. It was purely a matter of obtaining a dependable volume of traffic. If considerably more passengers were available—say, about fifty or sixty a day—the cost per mile would be 3*s.* Technical developments would permit of a further reduction of 1*s.*, and the various companies would be able to provide cheap aerial transport without the present Government subsidy.

The necessity for the utmost attention being given to commercial aviation was obvious from the fact that were European complications to arise in the future—which was quite within the realm of possibility—this country would be in the most dire jeopardy from enemy aircraft unless her own defensive aviation arrangements were of the completest kind. The simplest and cheapest way of attaining this was by developing air transport for commercial purposes. In the first place, it would keep designers, manufacturers, pilots and mechanics in employment, and promote progress along all lines of aeronautical development, creating a great Imperial reserve for time of emergency. In the second place, it would bind the British Empire together far more firmly than has ever been the case before, and mail and passenger services daily to our great overseas Dominions would encourage Imperial trade and enable the British Empire to become practically self-supporting.

LONDON TERMINAL AERODROME

Monday evening, March 19, 1923

Traffic of all kinds is beginning to boom, especially on the London-Paris route, where the number of passengers has almost reached previous summer levels. On one day during the week the Air Union, the combined C.M.A. and Grands Express Air Lines, had three machines in from Paris fully laden, while the Handley Page machines have been so heavily loaded with passengers that it has been found on many occasions impossible to carry the goods, which have been transferred to the French line.

One fact has already emerged from the increase in traffic and that is that the Handley Page Company are going to be woefully short of flying stock this summer, and that the cessation of competition by the British companies on the Paris route is going to mean a gift of the majority of the traffic to the French company. While Handley Page have less than half-a-dozen machines, the French Air Union can put no fewer than 30 Goliaths on to the service, and, in fact, are already sending over twice as many machines as are the British company.

French Concentration on Goods Traffic

The Air Union have laid themselves out for goods traffic, and are getting such quantities of freight that their ordinary land service of Ford vans has on many occasions proved inadequate for the handling of the goods, and three-ton lorries have had to be hired to enable the goods to be delivered rapidly from the aerodrome to London. This company are also getting their full share of passengers, and there is little doubt that last year's position of the British machines carrying the bulk of the traffic will be reversed this year.

There has been a crop of minor accidents lately. One of the Instone "D.H.34's" was compelled to descend in Belgium with engine trouble the other day, and the engine had to be removed and a new one installed On Thursday a Handley Page *en route* from Paris to Croydon was forced to descend near Coulsden—when almost in sight of its destination—by bad weather. In landing on rough ground the undercarriage was damaged, but the pilot, mechanic, and ten passengers were unhurt, and came on to the aerodrome by motor-car. During the week a new Goliath making its maiden flight to London came into the aerodrome at rather a high speed, and before it could pull up hit with its wing one of the huts near the Disposal Company's sheds. Fortunately, no one was hurt, but the machine was so damaged that it could not be brought into the sheds for a day or two until repairs had been made.

With regard to these little huts and obstructions, there is no apparent reason for allowing them on the aerodrome, although they are near to the extreme edge. An aerodrome wants to be as large as possible, and no matter how much room one has there is no reason to have obstructions which can easily be avoided. It is confidently expected that sooner or later some machine will pile itself up against the corrugated iron fence which has been erected at much expense all round the aerodrome, and which constitutes a possible danger at all times. Several minor accidents which occurred before the fence was erected would have been fatalities had the fence been there.

British Machines for Spain

Messrs. Muir and Youell, of the Surrey Flying Services, left Croydon *en route* for Seville, Spain, on Saturday, piloting two of the "D.H.9's" which the Surrey Flying Services have erected. Mr. Piercy is back from Madrid, where he has been flying a "D.H.9A" with a Rolls-Royce engine, in a competition to determine the best two-seater fighter for the Spanish Air Force. I understand that the order lies between Mr. Piercy's "9A," a new Fokker, and a French machine, and from all accounts it is extremely probable that the "9A" will have it.

I am given to understand that the mysterious Polish pilot who is to demonstrate the Polish variable-wing monoplane now at the Disposal Company's sheds is no other than Mr. Piercy himself, who will shortly be giving demonstrations on this machine. Mr. Piercy has flown to most parts of Europe, but has never before been anything but British.

Handley Page Transport are now fitting their original "W.8" with Rolls-Royce engines without gears, in place of the original Napier "Lions." This machine was always over powered and the experiment with gearless engines will be watched with interest, for by far the greater number of the serious engine troubles are connected with gears. One of the Handley Page machines which flew from Paris to London during the week had over a ton of paying load on board, while in another an invalid, who was unable to stand the train and boat journey, travelled on an improvised couch of cushions, and was lifted directed from the machine to the waiting motor-car which drove alongside the machine on its arrival.

The Daimler Airway and the K.L.M. have not yet experienced the boom in traffic which has been evident on the Paris route, and to some extent on the Cologne route, but there is a steady increase that points to plenty of activity in the summer.

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IN PARLIAMENT

Royal Air Force Promotion

Lord Apsley on March 12 asked the Secretary of State for Air whether ex-warrant officers of the Royal Navy or the Royal Naval Air Service are getting an equal share of promotion in the Royal Air Force; and whether those officers who are serving under special conditions, to complete time for pension, are barred from further promotion in the Royal Air Force?

Sir S. Hoare: The officers in question, nearly all of whom were non-pilot temporary warrant officers of the Royal Naval Air Service, were given temporary commissions on the formation of the Royal Air Force in 1918, and subsequently, when it was found that they could not return to the Navy, were offered special terms of service entitling them, after serving a specified period as commissioned officers, to retire on pension at a fixed rate. No prospects of promotion were held out to them, and no promotions have been made up to the present, although promotion is not definitely barred to them. It must be remembered that they have benefited by being paid as officers of the Royal Air Force on the General List, although the great majority are not qualified pilots, as well as by acquiring improved pension prospects.

Air Service: Brevet Rank

Major Yerburgh on March 13 asked the Under-Secretary of State for War whether he will consider the grant of appropriate brevet rank to those regular officers of the Army who were seconded for service with the Royal Air Force during the recent War and who were accorded special promotion in that force in the various honours lists?

Lieut.-Col. Guinness: The services rendered by such officers whilst serving with the Royal Air Force will not be overlooked, but I do not think the course suggested would be expedient. The grant of honours and rewards for War services ceased some time ago.

Artificer-Apprentices

Sir B. Falle on March 14 asked the First Lord of the Admiralty if the artificer-apprentices who are now being discharged and who are to be taken on in the Royal Air Force will be allowed to engage for long service; will they be fully-fledged tradesmen after serving in the Royal Air Force; and will the Admiralty take them back as engine-room artificers in the event of there being vacancies?

Commander Eyres-Monsell: These artificer-apprentices will be transferred to the Royal Air Force to serve the unexpired part of their 12 years' engagement in the Navy. The answer to the second part of the question is in the affirmative. With regard to the third part of the question these men will transfer to the Royal Air Force for the purpose of serving in that Force, and the question of re-entry in the Royal Navy will not arise.

Sir B. Falle: Does my hon. and gallant friend mean that all these apprentices will be accepted into the Air Force?

Commander Eyres-Monsell: I hope so, but I am not in a position to give quite a definite answer.

Iraq Royal Air Force

Mr. Moreing on March 15 asked the Secretary of State for Air the number of officers on, and attached to, the Air staff in Iraq?

Capt. Hucking (Vice-Chamberlain of the Household): I have been asked to reply. The answer is: Royal Air Force officers employed on Air staff, administrative, technical and medical duties, 60; Army officers attached for special staff and intelligence duties and for liaison work with the British and Indian troops, 12.

Iraq, Hinaidi Camp

Mr. Lambert asked the Under-Secretary of State for the Colonies what is the present position of Hinaidi camp, near Baghdad; what buildings are in course of erection; whther there is any postponement or cancellation of commitments; and what is the cost to date of that camp, and the total estimated expenditure?

Sir S. Hoare: The necessary information has now been obtained, and the answer is as follows:—

As regards the first part of the question, the present position of the Hinaidi camp is as follows:

When the Air Force assumed control the Army had partially completed the accommodation required for the military garrison. This accommodation has been adapted and modified to meet altered conditions.

The following programme of works services to meet Air Force requirements has been entered upon:—

(*a*) Regimental and technical accommodation for six squadrons of the Royal Air Force.

(*b*) An aircraft depôt with complete repair facilities for aeroplanes and transport and storage for technical and ordnance stores.

(*c*) A main hospital containing 600 beds for British and Indian personnel.

(*d*) Power-house and plant for the generation of electric lights and power, so as to render the Force independent of outside supply.

(*e*) The formation of a bund or bank around the camp to assist defence and prevent flooding.

The major portion of the above work, approximately 70 per cent., has been completed.

As regards the second part of the question, the chief buildings which are in actual course of erection and most of which are nearing completion, are as follows:—

(*a*) Technical and regimental accommodation for the aircraft depôt.

(*b*) Technical and regimental accommodation for two squadrons of the Royal Air Force.

(*c*) The British section of the main hospital.

(*d*) Power-house and plant.

(*e*) Recreation rooms and institute.

As regards the third part, the original Air Force scheme was framed to meet only the most essential needs of the garrison, and no curtailment nor postponement of the services included has been possible, other than postponement necessitated by the difficulties inseparably connected with the execution of works services in Iraq.

As regards the last part of the question the cost of the camp to date is approximately £980,000, and the total estimated expenditure, under Army and Air Votes, is £1,300,000. This total includes services estimated to cost £90,000 which have not yet been started and which will receive further consideration in connection with Estimates for 1924-25

FLIGHT
AIRCRAFT ENGINEER AND AIRSHIPS

THE ROYAL AIR FORCE

London Gazette, March 13, 1923

General Duties Branch

Flt. Lieut. C. S. Wynne-Eyton, D.S.O., is granted permanent commn. in rank stated; Jan. 5, 1921. Since promoted. *Gazette*, Jan. 14, 1921, appointing him to short-service commn. is cancelled. A. H. C. Derby is granted short-service commn. as Flying Offr., with effect from and with seny. of March 6. Sqdn. Ldr. F. J. Rutland, D.S.C., isplaced on half-pay, Scale B; March 3. Flt. Lieut. L. E. Taylor, M.B.E. is transferred to Reserve, Class B; March 9.

The following are transferred to Reserve, Class B, and not Class A, as *Gazette*, Feb. 27:—*Flt. Lieut.*: S. Frost; Feb. 15. *Flying Offrs.*: W. Allen, R. B. Dormor; Feb. 15.

Wing Comdr. J. Mead, C.B.E., M.C., is placed on retired list on account of ill-health contracted on active service; March 14. Flying Offr. L. de G. Sieveking, D.S.C., relinquishes his short-service commn. on account of ill-health, and is granted rank of Capt.; March 14.

Medical Branch

B. F. Haythornthwaite, M.B., B.A., is granted a short-service commn. as Flt. Lieut., with effect from and with seny. of Feb. 28.

Memoranda

Hon. Sec. Lieut. S. H. Reddish relinquishes his hon. commn. on enlistment in the Army.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the R.A.F. are notified:—

Group Captains: A. W. Bigsworth, C.M.G., D.S.O., A.F.C., from Armament and Gunnery School (Inland Area) to command Headquarters, R.A.F. Mediterranean. 2.3.23. N. J. Roche, O.B.E., from Headquarters, Iraq Command, to R.A.F. Depot (Inland Area). (Supernumerary.) 28.1.23.

Squadron Leaders: A. G. N. Belfield, from Electrical and Wireless School (Inland Area) to School of Technical Training (Men) (Inland Area). 26.2.23. T. S. Rippon, O.B.E., from R.A.F. Depot (Inland Area) to Central Medical Board (Coastal Area). 9.3.23.

Flight Lieutenants: C. J. W. Darwin, D.S.O., from R.A.F. Depot (Inland Area) to Air Ministry (Dept. of C.A.S.) (D.O.I.). 26.3.23. T. Henderson, M.C., A.F.C., from R.A.F. Depot (Inland Area) to Air Ministry (Dept. of C.A.S.) (C. of C.) 1.3.23. G. N. Humphreys, from Air Ministry (Dept. of C.A.S.) (C. of C.) to R.A.F. Depot (Inland Area). (Supernumerary.) 1.3.23. B. F. Haythornthwaite, M.B., B.A., to Research Laboratory and Medical Officers' School of Instruction (Coastal Area). On appointment to Short Service Commission in Medical Branch. For short course of instruction. 28.2.23. L. G. S. Payne, M.C., A.F.C., from Air Ministry (Dept. of C.A.S.) (D.O.I.) to R.A.F. Depot (Inland Area). (Supernumerary). 26.3.23. L. G. S. Payne, M.C., A.F.C., from R.A.F. Depot (Inland Area) to No. 5 Wing Headquarters (Inland Area). 4.4.23. N. Keeble, D.S.C., D.F.C., from R.A.F. Cadet College (Flying Wing) (Cranwell) to Headquarters, Iraq Command. (Supernumerary.) 23.2.23. W. G. Preston, D.F.C., from No. 100 Squadron (Inland Area) to R.A.F. Base, Leuchars (Coastal Area). (Supernumerary.) 20.3.23. E. Bennett, from Army (R.A.M.C.) to R.A.F. Depot (Inland Area) (Supernumerary). 17.1.23. E. Bennett from R.A.F. Depot (Inland Area) to No. 1 Stores Depot. (Supernumerary.) 5.3.23.

Captain: D. E. Whitworth, M.C., 2nd Lancers (Indian Army), Colonel Commanding Troops (Palestine Command). On attachment to Royal Air Force. On appointment as Staff Captain, Palestine Brigade. 4.1.23.

Flight Lieutenant R. Boog-Watson, M.B., D.P.H., from Headquarters (Iraq Command) to Station Commandant (Iraq Command). 5.11.22.

"Blazing the Air-Way to India"

A FILM record of the flight last year of Capt. Norman Macmillan, M.C., Capt. Geoffrey H. Malins, and Major W. T. Blake to India was shown at the New Gallery last week. In pioneer efforts of this nature it is well that there should be photographic records of the happenings, and in this new film the very varied and at times intensely hazardous flights of the pilot and his passengers are brought home to the public in a very convincing manner. From first to last, the series of pictures hold the audience's interest, and bring home to those who only look upon flights round the world as prolonged joy-rides, the tragic reality of the task undertaken. That those concerned in this flight did not succeed in their original intention was largely due, no doubt, to the difficulties—unforeseen and otherwise—of organisation. Experience, however, of a very valuable order must have resulted from the attempt, and this should go far to render successful the second world-encircling journey which Capt. Malins and Capt. Macmillan are now preparing to launch within a short period. The film is one which should be seen by all, and we wish the biggest measure of success to the second undertaking.

Indian Army Officers for Air Force

FORTY vacancies in the Air Force are announced for surplus (but not yet retired) officers of the Indian Army. The period for which they will be seconded is four years, after which twenty officers will be eligible for reabsorption in the Indian Army, and the others for permanent commissions in the Air Force. If reabsorption is not possible, officers will be entitled to retirement under the surplus scheme of benefits. The first year's training will be in Egypt and England. Officers already retired as surplus are not eligible.

Anti-Aircraft Brigades

IT is officially stated that in future all artillery anti-aircraft units of the Regular and Territorial Armies will form part of the Royal Garrison Artillery. The 1st Anti-Aircraft Brigade, Royal Field Artillery (Regular), will become the 1st Anti-Aircraft Brigade, Royal Garrison Artillery, and all existing Royal Artillery anti-aircraft units of the Territorial Army will become Royal Garrison Artillery units, with effect from February 8, 1923.

Navy Officers as Air Observers

CONCURRENTLY with the announcement of the date for the next course for naval officers desiring to qualify as air observers, the Admiralty have approved of revised arrangements in regard to this training, which was started in November, 1921, since when three courses, each of seven months' duration, have been held. For the two months' preliminary training at the naval schools 100 marks will be allotted for gunnery and 300 for signals; and for the five months' course at the Seaplane Training School at Lee-on-Solent 600 marks will be allowed. Of the maximum of 1,000, officers who obtain 800 marks or more will be awarded a first-class certificate, those with 650-799 marks a second-class, and those below 650 will be failed. New standards in each subject have also been adopted, and the particular attention paid to signalling is indicated by the adoption of 90 per cent. as the necessary standard in visual and in buzzer signalling: while in the Lee-on-Solent course 95 per cent. in buzzer (18 to 20 words per minute) has to be obtained. Officers who have already qualified as observers, except in buzzer, are required to undergo a further test in this subject, to be held at sea by a board appointed by the Commander-in-Chief, and confirmation will depend upon their obtaining the necessary 95 per cent. of marks in this test. The next course for observers begins on May 28.

Naval Officers at Andover

THE Air Council has allotted two vacancies for naval officers at the Staff College, Andover, for the course beginning about May 1. The course lasts approximately one year, and selection will be made from lieutenant-commanders up to two years' seniority, and from lieutenants over six years' seniority at the opening of the course. Officers with flying experience will be given preference, and those who wish their names to be considered should forward an application to the Admiralty through the usual channels as soon as possible. The new arrangement with the Air Council is similar to one already in existence, by which lieutenant-commanders or lieutenants are appointed for study at the Staff College, Camberley.

Gordon England Busy Again

WE were very pleased to see Gordon England about again on Saturday last at Brooklands. He took part in the J.C.C. efficiency trials, driving an Austin 7, the smallest car entered. Although England still uses crutches when walking he was able, by using his heel for operating the clutch, to drive the Austin quite comfortably. We learn that many of the small bones in his foot have had to be removed, and that therefore he will, unfortunately, always walk stiffly. However, England is as cheerful as ever, and does not let his Itford accident interfere in the slightest with his keen enjoyment of life.

A Stockholm–Tiflis Air Route?

ACCORDING to our French contemporary *Les Ailes*, an agreement has been reached between the German Junkers firm and the Soviet Government for the establishment of an air line extending from Petrograd *via* Nijni-Novgorod to Tiflis, with a northern extension to Stockholm and a southern one to Odessa. The Stockholm–Petrograd line has been in operation intermittently for over a year, and it is stated that the Russian portion is to be opened in the spring. The machines to be used will, of course, be Junkers monoplanes, some of them land machines, but the majority fitted with floats, as it is intended so to plan the route that the large rivers can be used partly as guides and partly as "aerodromes."

SOCIETY OF MODEL AERONAUTICAL ENGINEERS
(London Aero-Models Association)

THE Annual General Meeting of the Society was held at Headquarters, 20, Great Windmill Street, W. 1, on Friday last, Dr. A. P. Thurston being in the chair. Lack of space unfortunately prevents our giving the Hon. Secretary's (Mr. A. E. Jones) Report in full, but the following is a *résumé* of the same. After outlining the progress made, and successes achieved during the preceding year—the salient points being: recognition of Society by R.Ae.C., growing "outside" interest in the Society, and success of members in "Model Engineer" exhibitions and competitions—the Secretary dealt with the programme for 1923.

The Society, he said, is now in possession of 16 cups, four new ones having been presented since the meeting held in October. One presented by Mr. Percival Marshall as a token of appreciation to members loaning models at the late "Model Engineer" exhibition. A challenge cup, presented by Mrs. S. Jones, to be known as the "S.M.A.E. Challenge Cup," one presented by Mr. C. Bayard-Turner (a record cup for enclosed fuselage gliders), and another by Major C. C. Turner, for enclosed fuselage models record.

Dr. Thurston, Mr. F. de P. Green and Mr. A. F. Houlberg have promised prizes of £2 2*s*. and £1 1*s*., to be known as Freshman's Prize, open to all competitors who have not won a first prize. The Society is greatly indebted to all donors for their practical interest shown to it.

The programme for 1923 has now been completed by the sub-committee, and it is hoped that all members will be supplied with a copy at an early date. The programme includes about a dozen open competitions, numerous dates for attempts at general and glider records. In fact, there is not a vacant Saturday during the season of 1923. The Committee appointed to arrange the programme took into consideration all aspects appertaining to model aeronautics, including open handicap competitions for all types of models, open competitions for enclosed fuselage models, open competitions for gliders, and competitions to encourage the construction of power plants—in fact, there is hardly a single class unprovided for. Country members have not been forgotten, as the programme will show. By working in conjunction with the *Model Engineer*, it is hoped that greater progress will be made in this direction, arrangements having been made with the Editor of the *Model Engineer* to this end.

Now that the general rules, competition rules, etc. have been arranged, it is gratifying to note that there will be very little business to be transacted in future, and Friday evenings can be spent in a more sociable way, with lectures, debates, concerts, etc., and thus bring about the ideals of the majority of the members.

It is to be regretted that Mr. C. A. Rippon is resigning the post of Competition Secretary, but the Secretary said he hoped he would be able to appoint a successor to carry on the good work started by Mr. Rippon, who will now be kept busily employed with the photographic competition, which he is arranging and which has the approval of the Committee. Full particulars will be announced at an early date.

Members have been very active, experimenting and flying their models, and the meetings have been well attended, the general design and construction of machines showing great improvement. This is one of the advantages of being a member of the Society which enables members to co-operate and exchange their views. The improvement will doubtless show itself in the provinces through the publication of the drawings of the models in FLIGHT and *Model Engineer*. The Research Committee has not been idle, excellent work having been done, which will prove advantageous to the aeronautical world.

Concluding, the Secretary said he would take the opportunity of thanking the officers and others for the valuable assistance and advice they have always given him in his small endeavour to make the S.M.A.E. a success.

D. H. Pilcher Challenge Cup.—The first of the series of competitions will be held on Wimbledon Common at 3.30 p.m., March 31, 1923. Full particulars and rules have already been published in FLIGHT.

Mr. C. A. Rippon has resigned the post of Competition Secretary, and has been succeeded by Mr. C. Bayard-Turner, 21, Lanercost Road, Tulse Hill, S.W. 2.

A. E. JONES.
Hon. Sec.

⁂ ⁂ ⁂ ⁂

"Hooking" Small Aeroplanes from Large Ones

FROM Mitchel Field, Long Island, N.Y., comes the report that on March 8 successful tests were carried out with what are termed "slip" aeroplanes, when a small 18-ft. machine, weighing under 1,000 lbs., was hooked on to a trapeze-like arrangement lowered from a large machine flying immediately overhead. Altogether eight contacts were made from various altitudes. The tests were intended to demonstrate the possibility of supplying an aeroplane with necessaries, etc., during flight.

Rolls-Royce, Ltd.

THE directors, in their sixteenth annual balance-sheet for the year ended October 31, 1922, state that after (*a*) paying or providing for all trading expenses and suitable depreciation of buildings, machinery and plant, and charging repairs and replacements to revenue, and (*b*) making provision for Corporation Profits Tax, there is available for distribution the sum of £149,208 12*s*. 4*d*., together with the amount of £8,133 14*s*. 4*d*. carried forward from the previous year.

The three months' engineers' lock out at the works seriously disorganised the output, and, as will have been anticipated, affected the trading for the year. Certain monies for Excess Profits Duties and for other claims, which were included in the liabilities at October, 1921, have now been released and placed to the credit of the accounts for the year under review.

The directors recommend a dividend of 8 per cent. per annum on amounts paid up (subject to income tax), absorbing £64,932 6*s*. 7*d*., to transfer to income tax account, £24,000; to reserve fund, £60,000; and to carry forward to next year, £8,410 0*s*. 1*d*.

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PUBLICATIONS RECEIVED

Transactions, 1922-23. The Institution of Engineers and Shipbuilders in Scotland, Elmbank Crescent, Glasgow.

Aeronautical Research Committee, Reports and Memoranda:—

No. 803 (E. 4.) On a New Means of Ascertaining the Mean Pressure in a Heat Engine. By H. E. Wimperis. June, 1922. London: H. M. Stationery Office, Kingsway, W.C. Price 6*d*. net. By post 6½*d*.

No. 809 (Ae. 61). The Determination of Rotary Derivatives. By E. R. Relf, T. Lavender and E. Ower. September, 1921. Price 9*d*. net. London: H.M. Stationery Office, Kingsway, W.C. 2.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motor
The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1921
Published March 22, 1923

25,137. H. D. WOOTTON. Cameras for aerial photography. (193,448.)
25,464. H. L. PENFOLD. Petrol tanks for aircraft. (193,453.)
31,064. RAUL, MARQUIS OF PATERAS PESCARA. Supporting-means for flying machines. (171,705.)

APPLIED FOR IN 1922
Published March 22, 1923

1,495. A. B. ROGERS and T. GIUSTI. Rotary engines. (193,615.)
11,602. CURTISS AEROPLANE AND MOTOR CORPORATION. Radiators. (180,309.)
12,813. F. OGER. Two-stroke-cycle revolving cyl. I.C. engines. (193,750.)
28,230. A. B. ROGERS and T. GIUSTI. Bearings and lubrication of rotary engines. (193,796.)

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The Aircraft Engineer and Airships

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